INTRODUCTION TO EDUCATIONAL TECHNOLOGY

INTRODUCTION

Technology is the application of scientific knowledge to the practical tasks of life. The impact of technology is so tremendous that it practically dominates all spheres of life. If properly employed, technology could make education more productive, powerful more immediate learning, instruction is more scientifically based and access to education more equal. Due to technology, there is profound impact on how a person learns, what he learns and where he learns. The new technology challenges the educators to reassess their roles and responsibilities in an era of radical change.

When technology is used for the purpose of accelerating and facilitating educational processes with certain objectives in view, that technology is called educational technology. When a teacher uses educational technology in the class, he provides concrete (physical) structure to the mental (abstract) objectives. So educational technology is that science of strategies and techniques which leads us to the educational goals. Thus it refers to teaching strategies and techniques.

CONCEPT OF EDUCATIONAL TECHNOLOGY

Educational technology is the efficient organization of any learning system adapting or adopting methods, process and products to serve, identifies educational goals. This involves systematic identification of the goals of education, recognition of the diversity of learner's needs, the contexts in which learning will take place and the range of provisions needed for each of these. The challenge is to design appropriate systems that will provide for and enable appropriate teaching-learning systems that could realize the identified goals. Educational technology act as an agent of change in the classroom, which includes not only the teacher and the teaching-learning process but also systematic issues like reach, equity and quality.

Educational technology was never created, it has simply emerged. Though the origin of the term is unclear, the roots of this concept extend back through the centuries. The groundwork for the field of educational technology, then called educational engineering seems to have emerged with Franklin Bobbitt (1924) and WW Carters (1945). Finn in 1962 said educational technology is a process, and attitude, or a way of thinking about certain classes of problems.

The National Policy on Education (1986) reported that Educational Technology offers the means to reach large numbers in remote and inaccessible areas, remove disparity in educational facilities available to the disadvantaged and provide individualized instruction to learners conveniently suited to their needs and pace of learning.

DEFINITIONS

Some important definitions are as follows:

According to Gagne (1968) Educational technology is the development of a set of systematic techniques and accompanying practical knowledge, for designing, testing and operating schools, educational technology drawn upon many disciplines, including those which design working space, like architecture, equipment like physical sciences, social environments like sociology and anthropology, Administrative procedures like science of organizations and conditions of effective earning like psychology. Gagne views educational technology as instructional designing.

Derek Rowntree (1973) says educational technology is as wide as education itself. It is concerned with the design and evaluation of curricula and learning experiences and with the problems of implementing and propagating them. Essentially it is a rational problem-solving approach to education, a way of thinking scientifically and systematically about learning and teaching.

Educational technology according to Gillett (1973) is a systematic way of designing, applying and evaluating the total process of teaching and learning.

TYPES OF EDUCATIONAL TECHNOLOGY

There are three types of educational technology:

1. Technology in Education or ET-I
2. Technology of Education or ET-II
3. Systems Approach or ET-III

Technology in education or ET-I: Technology in education refers to application of engineering principles in the development of electro-mechanical equipment used for instructional purposes. This type of technology is known as ET-I or Hardware or Media. Beginning with simple audio-visual aids to the most sophisticated electronic gadgets, they all fall in this type of ET. Use of media in education including teaching-learning and educational management has revolutionized the educational system all over the world. It gives us a number of devices (media) with tremendous capabilities to facilitate the learning process of a given group of students. The hardware technology of education implies the use of mechanical materials and equipment in the area of education. In this sense, audio-visual aids like charts, models, filmstrips, slides, audio cassettes and sophisticated equipment and gadgets like films, projectors, radio, tape recorder, record player, television, video teaching machines and computers, etc. come under the category of hardware. Hardware approach is based on the application of principles of physical sciences and engineering to education and training

system. The mechanism is being introduced by preservation, transmission and advancement of human knowledge. For instance, a teacher can deal with a large group of students by his discourse on radio or television.

Technology of education or ET-II: Educational technology is also a process and a way of thinking about a problem. Substantial contribution of social sciences, specifically principles of psychology, operant conditioning of Skinner, etc. led to the development of ET. Technology of education refers to the detailed application of psychology of learning to practical teaching problems. The emphasis is on the scientific way of teaching-designing, structuring and implementing teaching to achieve well defined objectives. Consequently a greater diversity of strategies is being used to meet diverse needs and learning styles of students. This type of technology is also known as ET-II or software or programmed instruction. Technology of education suggests us the best way to use those media to accomplish certain specific objectives.The software approach or software technology of education owes its origin to the behavioral sciences and their applied aspects concerned with the psychology of learning. It originated from the engineering efforts of skinner and other behaviorists. According to Arthur Melton (1959), software teaching indirectly related to psychology of learning, which comprises behavioral changes resulting from experience. This view of educational technology is associated with the modern principles and theory of teaching, models of teaching, theory of instruction, and theory of teacher behavior and principles of programmed learning.

System approach or ET-III: The system approach to the design and analysis of teaching/training situations is the basis of the great majority of modern educational technology related developments. This type of technology is called ET-III or operating Systems or Management technology. The concept refers to a dynamic order of parts and process in mutual interaction. For example, classroom is a system of a bigger system, the school and all the systems have goals in accordance with the overall goal of a bigger system. The basic assumption of system approach is that teaching is a science-a professional activity aimed at achieving certain educational objectives.

IMPORTANCE OF EDUCATIONAL TECHNOLOGY

The importance of educational technology is to promote the efficiency of education by improving the quality of teaching, of educational administration and of educational research. So, educational technology is important for the following reasons:

1. **For effective instruction**: Research in instructional media reveals that motivated students can learn a great deal from any of the media.ET can improve the effectiveness of instruction.
2. **For facilitating individual differences:** ET facilitates individual students to learn according to their requirement and pace of learning. Individual students interact with instructional materials and pursue their learning tasks by themselves at their own arte of learning and are presented with opportunities to obtain information about their progress. Thus ET individualizes instruction.

3. **For providing equal educational opportunities:** ET is needed to provide equal educational opportunities to all. For instance educational radio and television programmes being broadcasted all over the country caters to all and unlimited number of students without discrimination. Programmed instructions tests can be studied by any student remote or under developed or employed or drop out etc.

4. **For preservation of knowledge**: Modern electronic gadgets provide tremendous capabilities t preserve knowledge and information for future use including print medium. Bulk of information can be preserved electromechanically in the form of audio-video programmes, computer software, video discs etc. even this very lesson is a part of ET.

5. **For transmission of knowledge**: Use of modern medial in education can reach and teach students in any part of the globe. Almost the entire country can be covered simultaneously through radio or television networking system. Communication satellites have added to the effectiveness and efficacy of communication at a distance and made it possible to link more than one location and more than one group of students through two way talk back system.

6. **For imparting quality education:** Because of advance planning and involvement of experts available in the area of study, mediated-teaching imparts quality education to unlimited number of students. Mediated education enables the use of the best teacher available in the area.

7. **For educational planning:** Educational technology helps in overall social planning and is concerned with qualitative and quantitative design of a community's entire education system. A systematic approach to teaching-learning includes specification of objectives designing and structuring content, determining evaluation techniques, etc.

8. **For improving learning:** It is needed to facilitate human learning through systematic identification, development, organization and utilization of a full range of learning resources and through the management of these resources.

9. **For pre-service and in-service teacher education:** Educational technology is need to make teacher training more effective via various new approaches, viz., micro-teaching, simulated teaching, models of teaching and interaction analysis- all for improving classroom interaction, producing effective teachers and helping teachers to become better teachers.

EDUCATIVE PROCESS

Until recently, the teachers used to be the sole interpreter and facilitator of knowledge to the learners and the textbooks were the sole resource. Technology will assist and support educational functions. Thus it increases the productivity of the teaching force and freeing them of the multitude of clerical record keeping chores and the elementary task of simply presenting information for students' consumption. It can help in restoring personal touch to the educational process. Educational technology has affected the conventional roles of the teachers and equips them with technical mindset to perform various activities related to

teaching and thus changed and improved the whole process of education in the following manner:

1. Educational technology has provided a scientific base to educational theory and practice.
2. It has helped teachers to use scientific and systematic approaches to conduct action research in the classroom situation to overcome the classroom problems, related to classroom environment, content, curriculum, etc.
3. It helps the teacher to modernize and mechanize the teaching learning process. It also helps the learners to study at their own rate with the help of programmed instructions on video or computers.
4. Educational technology supplements teachers in their instructional programmes through the structured lessons for remedial, enrichment or drill purposes. The learners get training of self-instruction and teachers ate relieved of the burden of routine repetition for exercise and revision purposes.
5. Equational technology supplements the teacher with audio-video aids to make the teaching learning process more effective. Audio-visual aids do not supplant the teacher.
6. Through analyzing the content and organizing it in a systematic, logical and psychological order in their lesson plans teachers, especially prospective teachers, visit the classroom with confidence and put up a high profile performance due to their total control on content and process.
7. It helps in teachers' professional growth.
8. It adds to the teaching competence, modifies their teaching behaviour and style, inculcates a scientific outlook, approach and attitude and helps them transfer to the learners.
9. It helps in realizing pre-specified learning objectives by incorporating available procedures and techniques.
10. It also helps to modify teachers' behavior and enables to make changes and thus makes teaching more effective.

In addition to the above mentioned, we can say that the main approach of educational technology in the educative process is that it helps to develop a training module using multi-channel learning which includes self learning, action learning, face to face interactive learning and learning through interactive television. The entire multi channel learning is the core of educational technology. The training network is extended from primary to secondary universities and has even reached open universities.

SCOPE OF EDUCATIONAL TECHNOLOGY

We can broadly discuss the scope of educational technology under the following headings:

1. **In revitalizing and reorienting existing resources** :i) To capitalize on the existence of a large number of institutions and facilities, nationwide networks and trained,

professional and creative manpower in the area of ET. ii) To recognize the potential of ICT and the internet and promote universal access.

2. **In systematic reforms**: i) To ensure that technology is used for equitable and democratic manner to enhance education of all. ii) To help to shift focus from fixed curricula to a flexible one. iii) to enhance open education

3. **In refreshing skills of in-service teachers**: i) To help to create a system of lifelong professional development and support in the area of education. ii) To support development and nurture teachers for their professional development.

4. **In Pre-service teacher education:**i) To introduce teachers to flexible models of reaching curriculum goals. ii) To introduce the use of media and technology in the teaching learning process of teachers. iii) To enable trainee teachers to access sources of knowledge to create knowledge.

5. **In school education:**i) To enable students to develop explanatory reasoning and higher order skills. ii) To enable students to access sources of knowledge and interpret them and create knowledge rather than be passive learners. iii) To promote flexible curriculum and flexible models of evaluation.

6. **In research:**i) To find out new initiatives for improvement ii) To examine the possibilities of mobile technologies for learning purposes. iii) To optimize learning paths for learners with different learning styles coming from a variety of social backgrounds.

EDUCATIONAL TECHNOLOGY-TODAY AND TOMORROW

The impact of educational technology is tremendous in overall development of human life. The green revolution in agriculture, hydroelectric projects in irrigation, production of heavy machinery and tools in industry and electronics are all the visible results of the technological advancement. And technology is here to stay. In the field of education, the Government of India in order to promote mass media and instructional technology has launched an educational technology project and the educational technology centre was set up in NCERT. The purpose was to improve education by the proper use of educational technology. National Policy of Education 1986 has stressed on the importance of ET in the following ways:

1. Establishment of National Open University
2. Establishment of Navodaya Schools in some areas to train rural talents.
3. Universalization of primary education through non-formal systems.
4. Developing effective systems of life-long education encompassing agriculture, health, literacy and other forms of adult learning needs.
5. More effective use of educational technology in the improvement of education in the existing school systems and universities.

CONCLUSION

Educational technology is an intellectual and practical pursuit concerned with all aspects of the design and optimal organization of educational systems and sub-systems and with the relation between their inputs and outputs, between desired outcomes and the allocations of resources to achieve them. The new educational technology is likely to sweep the country very fast. We, the teachers should be rather ready to receive and respond to this massive change in the field of education. A teacher has become a trainer instructor organizer and adopts new technological aids. With the help of mass media, quality education can be provided to children and adults alike even in remote and inaccessible areas.

Thus we can say that Educational Technology is goal oriented, systematic and ensures optimum outputs in terms of learning outcomes in minimum time. We can say that educational technology is now a part and parcel of our life and it will continue to impact our lives and help in enriching it.